



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/762,060	01/21/2004	Min Chu	M61.12-0594	4639
27366 7590 07/26/2007 WESTMAN CHAMPLIN (MICROSOFT CORPORATION) SUITE 1400 900 SECOND AVENUE SOUTH MINNEAPOLIS, MN 55402-3319			EXAMINER SHAH, PARAS D	
			ART UNIT 2626	PAPER NUMBER
			MAIL DATE 07/26/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/762,060	<b>Applicant(s)</b> CHU ET AL.	
	<b>Examiner</b> Paras Shah	<b>Art Unit</b> 2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 21 January 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>01/21/2004</u> . | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. This communication is in response to the Application filed on 01/21/2004. Claims 1-29 are pending and have been examined.

#### ***Information Disclosure Statement***

2. The information disclosure statement (IDS) submitted on 01/21/2004 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

#### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4, 7, 9-12, 15, 17, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hon *et al.* (US 5,680,510) in view of Huang *et al.* ("Whistler: A trainable Text-to-Speech System", 1996).

As to claims 1, 9, and 29, Hon *et al.* discloses

a speech processing system adapted to receive an input related to one of speech and process the input (see col. 4, line 47) to provide an output related to one of text (see col. 4, lines 46 and col. 9, lines 67-col. 10, lines 1-8), the speech processing system (see col. 9, line 65) accessing a module (see col. 5, lines 30-

33) (e.g. The accessing of a storage area of possible phones is seen.) derived from a phone set having a plurality of phones for a tonal language (see col. 4, lines 30-35 and col. 6, 44-48) (e.g. The final part of a syllable consists of two or fewer phones as is inherent in the Mandarin Chinese language (see col. 2, lines 1-5)), the phones being used to model syllables used in the module (see col. 6, lines 4-5), the syllables having an initial and final part (see col. 6, lines 4-5), wherein the final part comprises a plurality of phones (see col. 2, lines 3-4) (e.g. There can be multiple phones existing for the final component of a syllable) that jointly and implicitly carry the tonal information (see col. 6, lines 53-63 and col. 7, lines 65-col. 8, lines 1-21) (e.g. It is seen by the reference that the tonal information is dependent upon the initial, final, or a combination of the two).

However, Hon *et al.* does not specifically disclose the input being text and the output being speech.

Huang *et al.* does disclose the conversion of text to speech from learning methods of model parameters (see Abstract).

It would have been obvious to one of ordinary skilled in the art at the time the invention was made to have modified the speech processing system taught by Hon *et al.* and include a text to speech converter taught by Huang *et al.*. The motivation to have included such an element is to have an alternative means for inputting as well as producing a synthesized speech output based upon model parameters of the system (see Huang *et al.*, Abstract) as would benefit the

Art Unit: 2626

system of Hon *et al.* by using the tone related information as output speech for producing speech resembling the user.

As to claims 2 and 10, Hon *et al.* discloses wherein

each phone of the final part includes information about the tone (see col. 6, lines 53-63 and col. 7, lines 65-col. 8, lines 1-21).

As to claims 3, 4, 11, and 12, Hon *et al.* discloses wherein

the tonal language comprises a plurality of different tones with different levels of pitch (see col. 6, lines 55-56) (e.g. The Hon *et al.* reference discloses the use of two tones in the example. It is obvious to one of skilled in the art that these tones represent either high or low tones).

As to claim 7 and 15, Hon *et al.* discloses wherein

each syllable comprises the same form having the initial and the final, the final having two phones carrying partial tonal information each (see col. 6, lines 53-63 and col. 7, lines 65-col. 8, lines 1-21) (e.g. Since the final can possess diphthong or two phones, the tonal information being dependent on the initial, final, or a combination of the two).

As to claim 17, Hon *et al.* discloses wherein

the tonal language comprises Chinese or a dialect thereof, such as Cantonese (see Abstract).

5. Claims 8 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hon *et al.* (US 5,680,510) in view of Huang *et al.* as applied to claims 1 and 9 above, and further in view of Chen *et al.* (Us 5,751,905).

As to claims 8 and 19, Hon *et al.* and Huang *et al.* do not specifically disclose the syllables of the tonal language include a glide, which is embodied in the initial.

However, Chen *et al.* does disclose the glide being included and embodied in the initial (see col. 5, lines 42-45).

It would have been obvious to one of ordinary skilled in the art at the time the invention was made to have modified the speech processing system taught by Hon *et al.* and Huang *et al.* with the inclusion of a glide as the initial taught by Chen *et al.* The motivation to have included the element involves the reduction in the number of phonemes and reduces the context dependency of the consonants (see Chen *et al.*, col. 4, lines 42-46).

6. Claims 5 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hon *et al.* (US 5,680,510) in view of Huang *et al.* as applied to claims 1 and 9 above, and further in view of Akinlabi *et al.* ("tonal Phonology of Yoruba Clitics").

As to claims 5 and 13, Hon *et al.* and Huang *et al.* disclose the phone being associated with a categorical level.

However, they do not specifically disclose the levels of pitch comprising five categorical levels.

Akinlabi *et al.* discloses three types of tones being associated phonemically (see page 2, sect. 2, lines 1-2).

It would have been obvious to one of ordinary skilled in the art at the time the invention was made to have modified the speech processing system taught by Hon *et al.* and Huang *et al.* with three categorical levels taught by Akinlabi *et al.* The motivation to have included five categorical levels involves the inclusion of other tone languages such as Yoruba, where three tones are present (see Akinlabi *et al.*, page 2, sect. 2, 1<sup>st</sup> paragraph) as would benefit the teachings of Hon *et al.* to include other tonal languages using tonal information.

7. Claims 6, 14, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hon *et al.* (US 5,680,510) in view of Huang *et al.* as applied to claims 1 and 9 above, and further in view of Chen ("recognize Tone Languages Using Pitch Information on the Main Vowel of Each Syllable").

As to claims 6, 14, and 18, Hon *et al.* and Huang *et al.* disclose the phone being associated with a categorical level.

However, they do not specifically disclose the levels of pitch comprising five categorical levels.

Chen discloses the use of five pitch levels (see page 4, sect. 7.1, lines 1-3). It would have been obvious to one of ordinary skilled in the art at the time the

invention was made to have modified the speech processing system taught by Hon *et al.* and Huang *et al.* with five categorical levels as taught by Chen *et al.*. The motivation to have included five categorical levels involves the inclusion of other tone languages such as Thai, where five tones is present (see Chen *et al.*, page 4, sect. 7.1).

As to claim 19, Chen discloses

the tonal language comprising Vietnamese (see page 4, sect. 7.2).

8. Claims 20, 21, and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hon *et al.* (US 5,680,510) in view of Huang *et al.* and in view of Chen *et al.* (US 5,751,905).

As to claims 20 and 21, Hon *et al.* discloses

a speech processing system adapted to receive an input related to one of speech and process the input (see col. 4, line 47) to provide an output related to one of text (see col. 4, lines 46 and col. 9, lines 67-col. 10, lines 1-8), the speech processing system (see col. 9, line 65) accessing a module (see col. 5, lines 30-33) (e.g. The accessing of a storage area of possible phones is seen.) derived from a phone set having a plurality of phones for a tonal language (see col. 4, lines 30-35 and col. 6, 44-48) (e.g. The final part of a syllable consists of two or fewer phones as is inherent in the Mandarin Chinese language (see col. 2, lines 1-5)), the phones being used to model syllables used in the module (see col. 6,



lines 4-5), the syllables having an initial and final part (see col. 6, lines 4-5), wherein the final part comprises a plurality of phones (see col. 2, lines 3-4) (e.g. There can be multiple phones existing for the final component of a syllable) that jointly and implicitly carry the tonal information (see col. 6, lines 53-63 and col. 7, lines 65-col. 8, lines 1-21) (e.g. It is seen by the reference that the tonal information is dependent upon the initial, final, or a combination of the two). Further Hon *et al.* discloses the different tones with different levels of pitch (see col. 6, lines 55-56) (e.g. The Hon *et al.* reference discloses the use of two tones in the example. It is obvious to one of skilled in the art that these tones represent either high or low tones).

However, Hon *et al.* does not specifically disclose the input being text and the output being speech.

Huang *et al.* does disclose the conversion of text to speech from learning methods of model parameters (see Abstract).

It would have been obvious to one of ordinary skilled in the art at the time the invention was made to have modified the speech processing system taught by Hon *et al.* to include a text to speech converter as taught by Huang *et al.*. The motivation to have included such an element is to have an alternative means for inputting as well as producing a synthesized speech output based upon model parameters of the system (see Huang *et al.*, Abstract) as would benefit the system of Hon *et al.* by using the tone related information as output speech for producing speech resembling the user.

Hon *et al.* and Huang *et al.* do not specifically disclose the glide dependent initials

However, Chen *et al.* does disclose the glide being included and embodied in the initial (see col. 5, lines 42-45).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the speech processing system taught by Hon *et al.* and Huang *et al.* to include glide dependent initial as taught by Chen *et al.* Further, the motivation to have included the glide embodied in the initial involves the reduction in the number of phonemes and reduces the context dependency of the consonants (see Chen *et al.*, col. 4, lines 42-46).

As to claims 24 and 25, Hon *et al.* wherein

each syllable comprises the same form having the initial and the final, the final having two phones carrying partial tonal information each. (see col. 6, lines 53-63 and col. 7, lines 65-col. 8, lines 1-21).

As to claim 26, Hon *et al.* discloses wherein the tonal language comprises Chinese or a dialect thereof, such as Cantonese (see Abstract).

9. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hon *et al.* (US 5,680,510) in view of Huang *et al.* and in view of Chen *et al.*, as applied to

Art Unit: 2626

claims 1 and 9 above, and further in view of Akinlabi *et al.* ("Tonal Phonology of Yoruba Clitics").

As to claim 22, Hon *et al.* and Huang *et al.* discloses the phone being associated with a categorical level.

However, they do not specifically disclose the levels of pitch comprising five categorical levels.

Akinlabi *et al.* discloses three tones being associated phonemically (see page 2, sect. 2, lines 1-2).

It would have been obvious to one of ordinary skilled in the art at the time the invention was made to have modified the speech processing system taught by Hon *et al.*, Huang *et al.*, and Chen *et al.* with three categorical levels as taught by Akinlabi *et al.*. The motivation to have included five categorical levels involves the inclusion of other tone languages such as Yoruba, where three tones are present (see page 2, sect. 2, 1<sup>st</sup> paragraph) as would benefit the teachings of Hon *et al.* to include other tonal languages using tonal information.

10. Claim 23, 27, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hon *et al.* (US 5,680,510) in view of Huang *et al.* and in view of Chen *et al.* (US 5,751,905) as applied to claim 20 above, and further in view of Chen ("Recognize Tone Languages Using Pitch Information on the Main Vowel of Each Syllable").

As to claims 23 and 27, Hon *et al.* and Huang *et al.* disclose the phone being associated with a categorical level.

However, they do not specifically disclose the levels of pitch comprising five categorical levels.

Chen discloses the use of five pitch levels (see page 4, sect. 7.1, lines 1-3).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the speech processing system taught by Hon *et al.* Huang *et al.*, and Chen *et al.* with five categorical levels. The motivation to have included five categorical levels involves the inclusion of other tone languages such as Thai, where five tones are present (see Chen, page 4, sect. 7.1).

As to claim 28, Chen discloses

the tonal language comprising Vietnamese (see page 4, sect. 7.2).

### **Conclusion**

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Lee (US 5,220,639) is cited to disclose inputting of Chinese characters into a computer and recognizing syllables and tones. Chen *et al.* (US 6,510,410) is cited to disclose recognition of tone languages. Zhang *et al.* (US 6,553,342) is cited to disclose a tone based speech recognition using feature vectors

The NPL document by Wang et al. ("Complete Recognition of Continuous Mandarin Speech for Chinese Language with Very Large Vocabulary using Limited Training Data") is cited to teach modeling of sub-syllable models for tone recognition. Lee *et al.* ("Tone Recognition of Isolated Cantonese Syllables") is cited to disclose using neural networks for tone recognition. Wang *et al.* is cited to disclose recognition of Mandarin speech.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paras Shah whose telephone number is (571)270-1650. The examiner can normally be reached on MON.-THURS. 7:30a.m.-4:00p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached on (571)272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

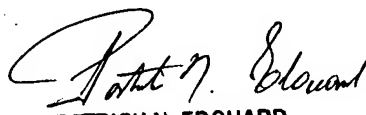
Application/Control Number: 10/762,060

Page 13

Art Unit: 2626

P.S.

07/16/2007

  
**PATRICK N. EDOUARD**  
**SUPERVISORY PATENT EXAMINER**